

# Preface

This special edition is devoted to recent scientific and engineering advances, as well as technological solutions, in the field of compound semiconductor power electronic devices, with emphasis on the unique properties and application potential of wide bandgap semiconductors. The contributions encompass applied research on device concepts and architectures, with particular attention to bipolar junction transistors, MOSFETs, and the characteristics of body diodes in power electronic structures.

The edition also highlights innovations in bonded substrate technologies and the design of effective high-voltage gate structures, both of which are central to improving next-generation power electronics' performance, reliability, and efficiency. By integrating perspectives from compound semiconductor development, device engineering, and system-level integration, this publication provides a comprehensive overview of the state of the art in the field of silicon carbide power electronics.

As a valuable resource for researchers, engineers, and practitioners, this special edition presents a balanced account of the scientific foundations together with the engineering and technological solutions that underpin the advancement and deployment of SiC-based power devices.